



Published to advance the Science of cold-blooded vertebrates

THE OCCURRENCE OF *TRACHYPTERUS*  
*REX-SALMONORUM* AT MONTEREY,  
AND NOTES ON ITS POST-  
LARVEL GROWTH.

On April 9, 1923, a small specimen of *Trachypterus rex-salmonorum*, Jordan and Gilbert was cast up on a beach near Monterey, California. Through the kindness of Professor J. O. Snyder, I was enabled to compare this specimen with the type<sup>1</sup> which is in the Stanford University fish collection, and make careful measurements on both specimens. Since the fishes of this interesting group are so seldom collected and so poorly known, it seems advisable to publish these notes.

The usual descriptive notes are as follows: Length, snout to base of caudal fin, *type specimen*, 288 mm.; this specimen, 104 mm. Head, in hundredths of length, 12.2; 19.2. Depth, in hundredths of lengths, 13.2; 18.7. Maxillary, in hundredths of head length, 39.0; 35.0. Eye, in hundredths of head length, 31.0; 30.0. Dorsal, 5,170; 5,171. Caudal, 8; 7. Ventrals, 6; 6. Pectorals, 11; 10 (?). Lateral prickles a little more pronounced in this specimen than in the type. Color in spirits exactly similar except for the greater diffuseness of the blotches in the case of the type. In life, this specimen in addition to the bright carmine of

<sup>1</sup> The type description may be found in Proc. Cal. Acad. Sc. Vol. 4 second series 1894.

the first dorsal, ventrals and caudal, noted in the type description, had a pink tinge on the posterior portion of the second dorsal and a purplish hue on the dark line along the base of the dorsal becoming black on the caudal peduncle.

The above comparison shows very striking discrepancies in various measurable proportions, but the convincing structural similarity leaves no doubt that the two fish are of the same species. The chief difference is that the larger specimen has a proportionately longer and more slender body. It is evident that this species undergoes a considerable change in shape as it grows. These changes may be provisionally examined by the means of the following tabulation:

	Type Specimen mm.	This Specimen mm.	% Incre- ment	% Incre- ment % Head
Length of head <sup>2</sup> .....	33	18	80	1.0
Diameter of eye .....	11	6	80	1.0
Distance, edge of eye to nape.....	12	5	140	1.8
Length of maxillary .....	14	7	100	1.2
Breadth of maxillary .....	7	4	75	0.9
Length, to base of caudal <sup>2</sup> .....	285	102	180	2.2
Distance, nape to base of caudal....	270	94	190	2.4
Depth, at nape .....	38	19.5	95	1.2
Depth, at middle first blotch.....	36	17	110	1.4
Depth, at middle second blotch ....	29	13	120	1.5
Depth, at middle third blotch ....	27	10	170	2.1
Depth, at middle fourth blotch.....	22	9	145	1.8
Height of first dorsal .....	42	27(?)	60+	0.7
Height of second dorsal .....	24	16	50	0.6
Length of ventral fins .....	55	45	20	0.2
Length of caudal fin .....	111	45	150	1.9
19th spine of second dorsal above middle of first blotch, its distance from nape .....	34	15	130	1.6
38th above 2nd blotch, distance....	62	30	105	1.3
65th above 3rd blotch, distance....	105	49	115	1.4
95th above 4th blotch, distance....	144	66	120	1.5
Distance from middle of fourth blotch to base of caudal .....	124	28	340	4.2

<sup>2</sup> Both specimens had their premaxillaries fixed in a protracted position, in the case of the type the amount of protraction was estimated at 3 mm. and in the case of this specimen it was estimated at 2 mm. These amounts were subtracted from the gross measurements leaving the net measurements as above.

Assuming, if we may, that these two specimens exemplify the growth of the species from the length 102 to 285 millimeters, we can make some deductions as to the character of that growth. Using the respective dimensions of the various parts of the smaller fish as the basis, we have calculated the increment in per cent. that accrues to each part in reaching the size of the corresponding part in the larger fish. These percentage increments are listed in the third column of the above table. It will be seen that the head and eyes have increased the same amount, 80 per cent. The maxillary increments in length and breadth, 100 and 75 per cent respectively, depart from this somewhat but that may be due to the fact that the magnitude of the organ is not much greater than the unit of measurement employed, and necessarily the measurements are subject to a large percentage error. The depth of the nape is really that of the head plus the nuchal crest. By subtracting the height of the crest from the depth, we find that the head depth is 26 millimeters and 145 millimeters in the small and large fish respectively. That shows also an increment of 80 per cent. This seems to indicate that the head and all its parts increase at the same rate. It is reasonable then, to compare the growth of the various parts of the fish with that of its head. We have done so by determining the ratio of every increment in the third column of the table to the head increment, the results being shown in the last column of the above table. Thus we find that the depth of the fish at all points increased more than the head, the greater increase being at the third blotch and amounting to twice that of the head. But the length increased still more in proportion. This length was not distributed equally along the entire length. At the middle of the fourth blotch and points anterior, the increase in length was one and a half times as much as that of the head, but the portion posterior to that increased four and one-fifth times

as much as the head. Evidently the growth at the caudal end of the fish is very fast indeed. The fins, on the other hand, do not grow so fast; their growth not nearly equalling that of the head, except the caudal fin, the increase of which was just less than that of the body of the fish.

All these conclusions being based on only two specimens are very provisional. The significance of these post-larvel changes connected with the growth becomes apparent when we realize that the separation of some of the species in this group has been made largely on proportion measurements. Since these change so remarkably within the species, such characters may be invalid when applied to distinguish between species. It is hoped that these limited comparisons may be extended by the collection of more specimens of this very interesting group of fish.—O. E. SETTE, *California State Fisheries Lab.*

#### NOTES ON THE STATUS OF *HYLA* *PHAEOCRYPTA* COPE

Just before midnight on August 15, 1917, I collected several specimens of a tree frog, which superficially resembled *Hyla versicolor*, whistling their note from the young tupelo trees in a swamp near Mandeville, La. Its beautiful bird-like voice, suggestive of the red-bellied woodpecker, and its greenish concealed surfaces which contrast in life with the yellow or orange of *versicolor*, easily convinced me that it was distinct from that species.

I have since become thoroughly familiar with this frog in life, but have been unable to unearth anything suggestive of it in literature. I was therefore tempted to describe my find under a new name. By a gradual process of elimination, however, which included field study of all Louisiana *Hylas* in life, and preserved material from other sections as well, and

after much correspondence with various herpetologists, there remained one possibility, the single type specimen of *Hyla versicolor phaeocrypta*, Cope, from Mt. Carmel, Ill., which rests in the National Museum. As virtually all the distinguishing characters of my new frog were lost in the preservative, its general resemblance to *Hyla versicolor* made comparison with museum material difficult, especially since *versicolor* is such a variable species. Except for the smaller size, which could easily have been due to age, there is nothing in Cope's description of *phaeocrypta* that would suggest my specimens.

Dr. Stejneger has compared preserved specimens of my species with Cope's type of *phaeocrypta* with the result that structurally at least he could not tell them apart, yet this in itself was not conclusive, as my specimens also exhibit a structural resemblance to small specimens of *Hyla versicolor chrysoscelis*.

As it is impossible to revive the voice of Cope's type specimen, someone must hear and collect its descendants in or near the type locality. Fortunately this has virtually been done through the kindness of Mr. Karl P. Schmidt, of the Field Museum, who has called my attention to a series of specimens from Olive Branch, Illinois, in that museum, and these seem to be the same as Cope's *phaeocrypta*. The field notes of Mr. C. M. Barber which were submitted by Mr. Schmidt are especially interesting, as they may supply the missing evidence:

"Whilst collecting *Hyla cinerea* with a light in a boat, on Horseshoe Lake, May 23, 1907, with Dr. Chatham, my attention was called to a birdlike cry coming from trees and bushes overhead. At first I thought it resembled the rattle of *Acris*, but it has a birdlike quality quite peculiar. Several searches were unsuccessful, but finally we were able to find the sober-colored little frog when he uttered his cry, fearlessly, within a few feet, and with the light fully on

him. Their note is strong and penetrating and more pleasing than any *Hyla* that I know. I had previously taken one in the grass near the lake, but mistook it for a juvenile *versicolor*."

The evidence at hand at least indicates an additional *Hyla* for the American check-list. *Hyla phaeocrypta* should also stand provisionally as the specific name. It should however, be rediscovered in the type locality and the voice noted.

Although there are apparent differences in the specimens at hand, between the *phaeocrypta* of Illinois and the bird-voiced *Hyla* of Southeast Louisiana, it is difficult to pass an opinion with the limited material available. These also must be considered the same until both forms can be compared in life, or better, be heard by the same person.

The distinguishing characters of the Louisiana form are as follows, otherwise it is much the same as *Hyla versicolor*, whose range it overlaps in parts of this state:

Size averaging about one and a quarter inches, generally smaller than but sometimes approaching the size of *Hyla versicolor*. Color, ashy grey to greenish above, generally intermediate, like the damp lichens which they mimic. Darker markings on the back are irregular and asymmetrical, sometimes tending to, but never forming a distinct and symmetrical cruciform pattern. The greater portion of the dark color lies behind the middle of the back but otherwise the design is extremely variable, often being broken into disconnected spots or blotches. The concealed surfaces of the thighs and sides are greenish, the green on the posterior surface of the femur being irregularly vermiculated with darker.

Dorsal integument almost smooth, the tubercles being fine and granular. The voice is bird-like, being a plaintive whistle repeated in quick succession, much

as in the red-bellied woodpecker. This is sometimes preceded by a few notes of a slower call much like the voice of *Hyla crucifer*.—PERCY VIOSCA, JR., *New Orleans, Louisiana*.

### NOTES ON MIDDLE STATES AMPHIBIANS AND REPTILES.

The following collection was made, August, 1922, in Essex County, N. Y.:

*Notophthalmus viridescens viridescens* (Rafinesque), terrestrial form. *Desmognathus fuscus fuscus* (Rafinesque). Both the above from Westport.

*Rana catesbeiana* Shaw. *Rana palustris* Le Conte. Both from Long Pond.

*Lampropeltis triangulum triangulum* (Lacépède). Near Essex Station. 32 inches.

*Storeria occipito-maculata* (Storer). Westport.

*Thamnophis sirtalis sirtalis* (Linn). Crown Point, New York.

The following were collected in New Jersey and Pennsylvania:

*Gyrinophilus porphyriticus* (Green). Two specimens of the above were taken Dec. 8, 1922, at Indiana, Pa. They were found in a spring drain which had been uncovered in blasting for coal. The drain was about two feet underground and never freezes. The specimens were very active and lived for some time in captivity.

*Storeria occipito-maculata* (Storer). West Berlin, N. J., November 12, 1922.

*Clemmys muhlenbergii* (Schoepff). Quakertown, Bucks Co., Pennsylvania.

*Clemmys insculpta* (Le Conte). Quakertown, Bucks Co., Pa. This turtle was captured May 23,

1922, and after being placed in the Museum yard laid eight eggs on May 26. They were buried about two inches under ground and were 38 mm. by 26 mm. in size; the shell was very much like heavy parchment. On July 19, an egg was opened, the embryo was found more or less formed with traces of a carapace. On August 7, a second egg was opened; entire embryo was formed, but small, the circulatory system was active and continued so for two hours after the egg was opened. A third egg was opened on September 7, embryo was almost completely formed and very active, it opened mouth and extended legs. About the first of October the remaining eggs hatched except one, which seemed to be infertile. Measurements of four eggs on September 23 averaged 39 mm. by 34 mm. — HAROLD T. GREEN, *Academy of Natural Sciences of Philadelphia*.

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PRICE FIVE CENTS

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